## REMARKS

**Status of case**

Claims 28-30 are currently pending in this case. Claims 11-12 have been cancelled.

**Rejection under 35 U.S.C. §112**

Claim 13 was rejected under 35 USC 112, first paragraph, as failing to comply with the written description requirement. The Examiner objected to the claim limitation of "A computer readable medium storing computer executable instruction" as lacking support in the specification. Applicants respectfully disagree. The specification states in paragraph 58 that "[t]he aforementioned image encoding method and image decoding method can be substantialized by an image encoding program and an image decoding program for letting a computer execute each of the steps thereof." People know that a computer program is stored in a computer readable medium, such as a ROM or a CD-ROM, or other type of memory.

**Rejection under 35 U.S.C. § 103**

Claims 11-13 were rejected under 35 USC 103(a) as being unpatentable over Watson et al (US 2003/0161397) in view of Mathias Wein (Q15-K-24). Applicant has cancelled claims 11-13 and added new claims 28-30. Claim 28-30 basically follow claims 11-13 but eliminated any ambiguities and improved syntax of claims 11-13.

In the claims 28-30, it has been made clear that the shorter strings of 16 transform coefficients are each first subjected to entropy decoding and then combined through de-interleaving into the single string of 64 coefficients. The cited references are silent about the feature of the present invention.

Watson is directed to a new method of performing a zigzag operation. The entire disclosure of Watson is dedicated to the zigzag operation performed in an encoder, but Watson suggests that the operation may be performed inversely in a decoder. As is well known, the decoder performs the processes shown in Fig. 3 of Watson from the bottom to the top. In the decoder context of Watson, therefore, a string of data first goes through

entropy decoding and is then subjected to an inverse zig-zag operation to thereby reconstruct a matrix of transform coefficients for inverse quantization and transform.

In the inverse zig-zag operation of Watson, a single string of entropy-decoded coefficients is first divided into sub-strings of coefficients. Then, the coefficients in the sub-strings are shuffled among the sub-strings and reordered into a single string of the original length. In Watson, the coefficients in the sub-strings are not individually addressable and collectively identified by the numbers of the sub-strings or registers (para. 43, lines 8-12).

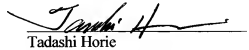
There are two important distinctions between Watson and the present invention. In Watson, a single string of coefficients goes through entropy decoding and then through the inverse zig-zag operation, whereas in the present invention recited in claims 28-30, four strings of coefficients are individually entropy-decoded and then de-interleaved or combined into a single string of coefficients. Watson is silent about combining individually entropy-decoded strings into a single string.

Second, in the present invention, four strings of coefficients are de-interleaved or mixed into one longer string. Watson is silent about this decoding operation of the present invention. In the Watson zig-zag operation, coefficients in the sub-strings are not individually addressable. Therefore, in Watson, when a single string of coefficients is received and divided into sub-strings, the coefficients can only be shuffled and reordered within these sub-strings. In other words, in Watson, the length of coefficient string outputted from the zig-zag operation has to be equal to the length of the coefficient string inputted to the zig-zag operation, because mixing coefficients in one string (not a sub-string) with those of another separate string (not a sub-string) into one longer string requires addressing of individual coefficients in both the one string and the other sting to be mixed with the one string.

Mathias is also silent about de-interleaving four individually entropy-decoded strings of coefficients into one longer string of coefficients. Therefore, Applicant submits that the present invention would not have been obvious in view of Watson and Mathias, either individually or in combination. Applicants respectfully request the Examiner grant early allowance of this application.

The Examiner is invited to contact the undersigned attorneys for the Applicant via telephone if such communication would expedite this application.

Respectfully submitted,



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